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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/755,490	01/12/2004	Richard E. Smalley	11321-P034D1	1978

7590 06/28/2005

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EXAMINER	
TSOY, ELENA	

ART UNIT	PAPER NUMBER
1762	

DATE MAILED: 06/28/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/755,490	SMALLEY ET AL.	
	Examiner	Art Unit	
	Elena Tsoy	1762	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *09 May 2005* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *28-50* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *28-50* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other:

Response to Amendment

1. Amendment filed on May 9, 2005 has been entered. Claims 28-50 are pending in the application.

Claim Objections

2. Objection to claims 29 and 30 because of the informalities has been withdrawn due to amendment.

3. Objection to claim 48 because of the informalities has been withdrawn due to amendment.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. **Claims 28-38, 43, 48** are rejected under 35 U.S.C. 103(a) as being unpatentable over Davey et al (US 6,576,341) in view of Dillon et al (US 20020150529) for the reasons of record as set forth in Paragraph No. 6 of the Office Action mailed on 11/17/2004.

7. **Claims 39-42** are rejected under 35 U.S.C. 103(a) as being unpatentable over Davey et al (US 6,576,341) in view of Dillon et al (US 20020150529), further in view of Tohji et al (Fullerene Science and Technology, 7(4), 665-679, 1999) for the reasons of record as set forth in Paragraph No. 7 of the Office Action mailed on 11/17/2004.

8. **Claims 44, 45, 50** are rejected under 35 U.S.C. 103(a) as being unpatentable over Davey et al (US 6,576,341) in view of Dillon et al (US 20020150529), further in view of Mueller (US 4,098,742).

Davey et al in view of Dillon et al are applied here for the reasons of record as set forth in Paragraph No. 6 of the Office Action mailed on 11/17/2004. Davey et al disclose a process for purification of nanotube (including SWNT and MWNT) soot in a non-destructive and efficient method using a polymer having a coiling structure to extract nanotubes from their accompanying material without damage to their structure and with a high mass yield. Nanotube soot is added to a solvent which including a coiling polymer to form a solution. The solution is mixed with a nanotube composite suspension is formed with extraneous solid material such as amorphous carbon settling at the bottom of the solution. The nanotube composite suspension is decanted from the settled solid. See Abstract. Obviously, the coating of the coiling polymer should be removed to obtain purified nanotubes.

Davey et al in view of Dillon et al fail to teach that the removal of polymer coat comprises contacting the coated nanotubes with a second solvent having a low surface tension (Claim 44) such as chlorinated hydrocarbon (Claim 45) or tetrahydrofuran (Claim 50).

Mueller teaches that a solvent will not wet a coating with a surface tension lower than that of the solvent (See column 1, lines 37-41).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have removed a polymer coating in Davey et al in view of Dillon et al using a second solvent having surface tension lower than that of a first solvent in which a polymer was dissolved, with the expectation of providing the desired wetting, as taught by Mueller.
It would have been obvious to one of ordinary skill in the art at the time the invention was made to have selected the second solvent among conventional solvents such as chlorinated hydrocarbons and tetrahydrofuran depending on the first solvent, with the expectation of providing the desired wetting.

9. **Claim 46** is rejected under 35 U.S.C. 103(a) as being unpatentable over Davey et al (US 6,576,341) in view of Dillon et al (US 20020150529), further in view of Bower et al (EP 989579) for the reasons of record as set forth in Paragraph No. 8 of the Office Action mailed on 11/17/2004.

10. **Claim 47** is rejected under 35 U.S.C. 103(a) as being unpatentable over Davey et al (US 6,576,341) in view of Dillon et al (US 20020150529), further in view of Shaffer et al (Advanced materials, 11, No. 11, 1999) for the reasons of record as set forth in Paragraph No. 9 of the Office Action mailed on 11/17/2004.

11. **Claim 49** is rejected under 35 U.S.C. 103(a) as being unpatentable over Davey et al (US 6,576,341) in view of Dillon et al (US 20020150529), further in view of Hsu et al (US 6,333,598) for the reasons of record as set forth in Paragraph No. 10 of the Office Action mailed on 11/17/2004.

Response to Arguments

12. Applicants' arguments filed May 9, 2005 have been fully considered but they are not persuasive.

(A) Applicants state that Dillon is not a valid prior art reference; thus, these rejections are improper and must be withdrawn. The present Application has a date of priority of August 24, 2000 (U.S. Provisional Patent Application Serial No. 60/227,604). Dillon bases its priority upon PCT Patent application PCT/USO1/01698, which was filed January 17, 2001. Thus, the earliest priority date of Dillon is January 17, 2001, which is after the effective filing date of the present Application.

The Examiner respectfully disagrees with this statement. The 35 U.S.C. 102(e) critical reference date of a U.S. patent or U.S. application publications and certain international application publications entitled to the benefit of the filing date of a provisional application under 35 U.S.C. 119(e) is the filing date of the provisional application with certain exceptions if the provisional application(s) properly supports the subject matter relied upon to make the rejection in compliance with 35 U.S.C. 112, first paragraph. See MPEP § 2136.03 (III).

The Provisional Patent Application Serial No. 60/177,075 of Dillon properly supports the subject matter relied upon to make the rejection (See page 13, lines 20-27).

Thus, the earliest priority date of Dillon is **January 19, 2000**, which is prior the effective filing date of the present Application.

(B) Applicants argue that even assuming for the sake of argument that Dillon could be viewed as prior art the Examiner has not established a prima facie showing of obviousness, because there is no such motivation disclosed or taught in the cited art.

The Examiner respectfully disagrees with this argument.

Davey et al teach that the term *nanotube* is taken to mean ***any*** *nanostructure* and ***related*** *materials*. The nanotubes which are mixed with polymers can be in the form of carbon nanotubes, nanotubes of other materials such as vanadium pentoxide for example, **nanostructures** (regular and undefined), having dimensions from nanometers in length to millimeters in length, as well as nanometers in width to micrometers in width. See column 3, lines 8-23. **In other words, *aggregates* of SWNTs carbon nanotubes are not excluded from the teaching of Davey et al.** Dillon teaches that SWNTs in water exist in the form of aggregates. Therefore, if SWNTs carbon nanotubes are used as *nanotubes* and water as a *suitable solvent* in a process of Davey et al, the polymer would wrap **aggregates** of SWNTs carbon nanotubes if mixing means of less intensity than sonication are used. Davey et al teach *all* main features of claimed invention. Dillon is relied upon to show what would occur in the process of Davey et al if some conditions of the process of Davey et al were met.

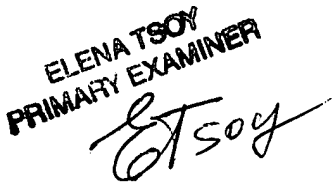
Thus, the Examiner has established a prima facie showing of obviousness.

Conclusion

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Elena Tsoy whose telephone number is (571) 272-1429. The examiner can normally be reached on Mo-Thur. 9:00-7:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Timothy Meeks can be reached on (571) 272-141523. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Elena Tsoy
Primary Examiner
Art Unit 1762

June 23, 2005